

Monthly Marine Biotoxin Report January 2010

Technical Report No. 10-03

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of January, 2010. Ranges of toxin concentrations are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory that was in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA); (iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

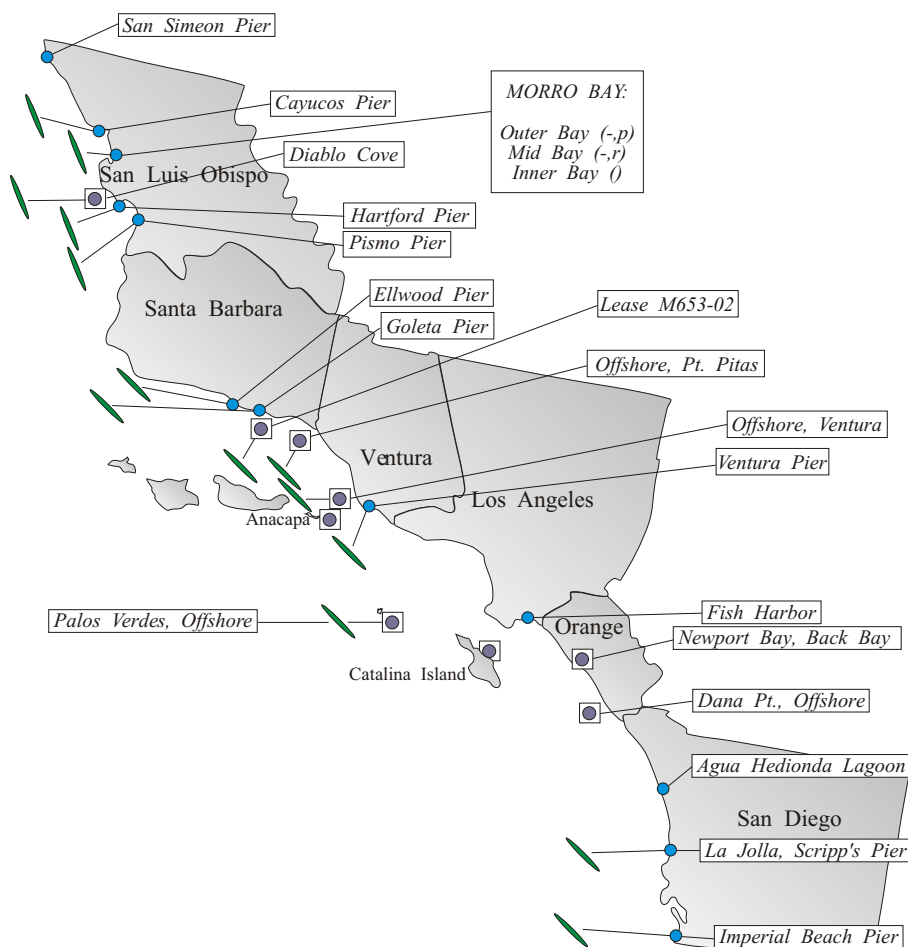
Southern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was not observed at any sampling location during January (Figure 1). PSP toxins were not detected in any shellfish samples (Figure 3).

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during January, 2010.



Relative Abundance of Known Toxin Producers

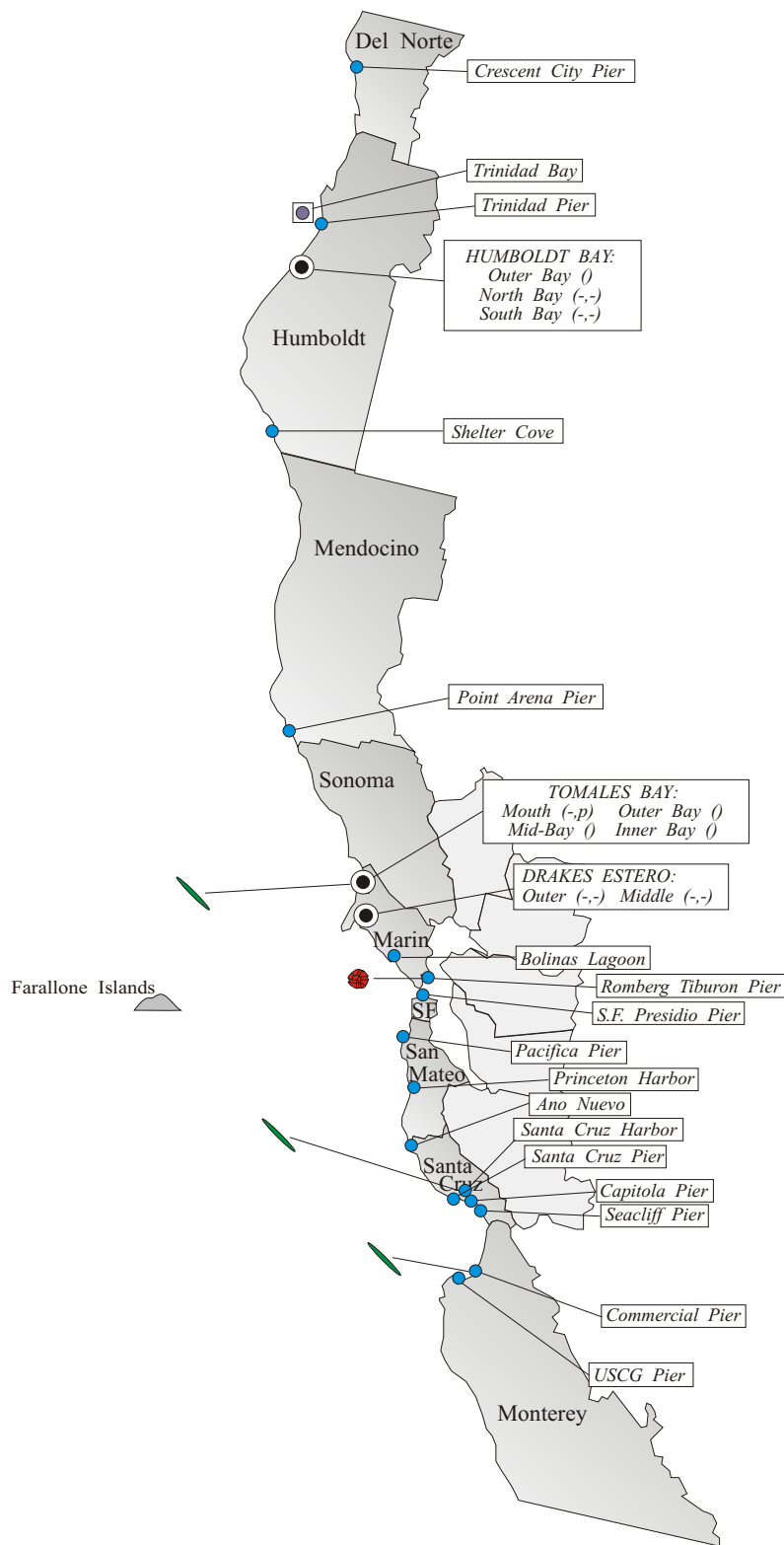
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (less than 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:
(a,p) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 2. Distribution of toxin-producing phytoplankton in Northern California during January, 2010.



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Domoic Acid

Pseudo-nitzschia was detected at a number of locations along the southern California coast during January (Figure 1). The relative abundance of this diatom was very low at all locations.

Non-toxic Species

Phytoplankton diversity and abundance was very low at all locations. The diatom *Chaetoceros* was the most common genus observed between San Luis Obispo and Orange counties. The dinoflagellates *Lingulodinium polyedrum* and *Prorocentrum micans* were the most common phytoplankton observed at sampling sites in San Diego County.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was absent from all but one location in January (Figure 2). This dinoflagellate was observed, but rare, in a sample collected from inside San Francisco Bay at Tiburon on January 19.

PSP toxins were not detected in any shellfish samples analyzed in January (Figure 4).

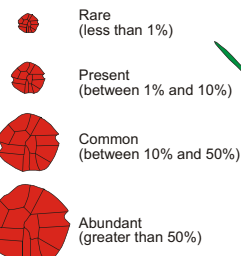
Domoic Acid

Pseudo-nitzschia was observed at only three sampling locations in January (Figure 2).

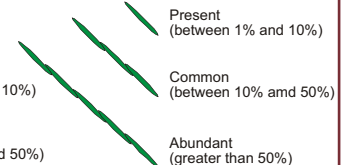
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Relative Abundance of Known Toxin Producers

Alexandrium Species



Pseudo-nitzschia Species



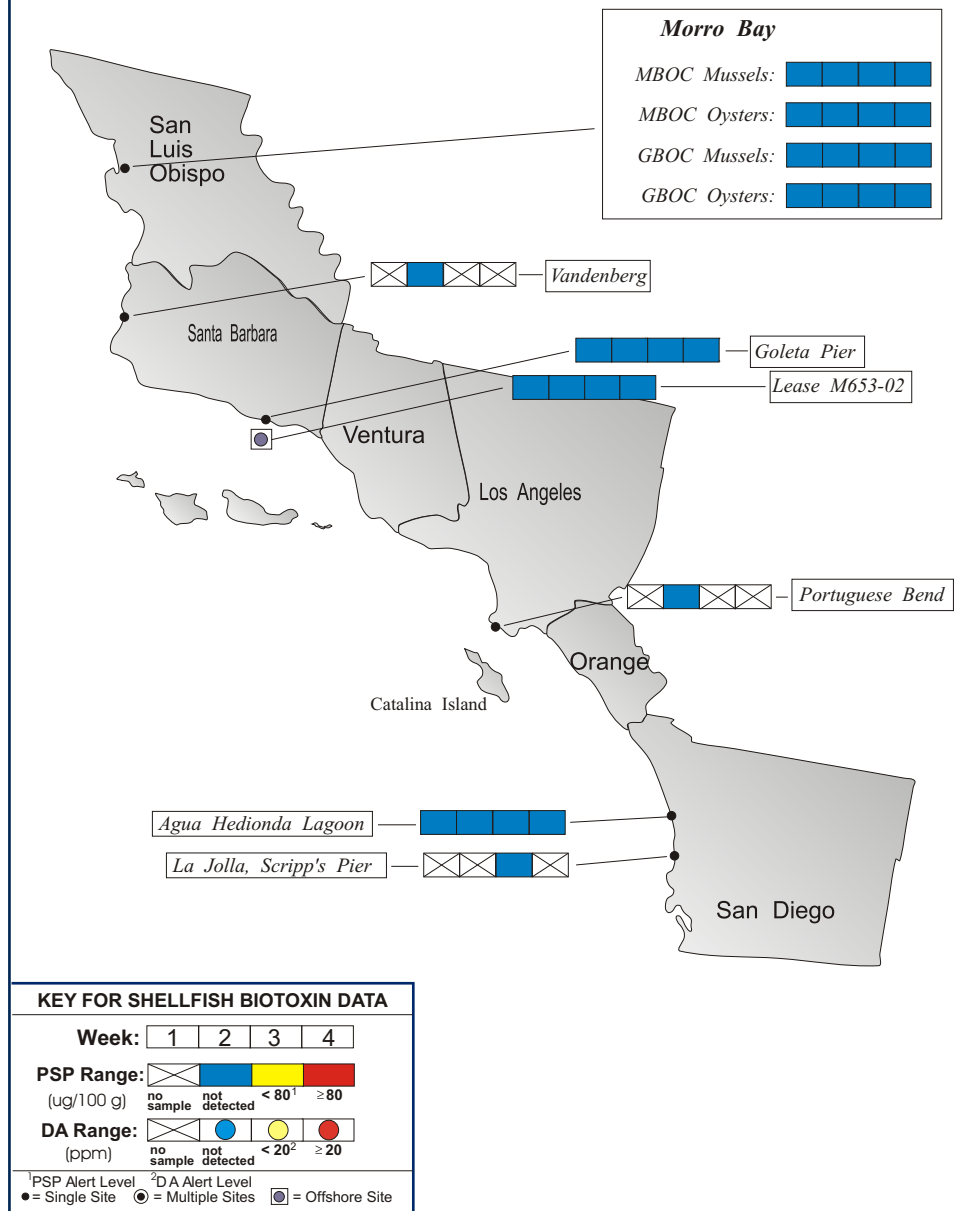
MONTHLY SAMPLING STATIONS:

- Single Sampling Station
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- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:

(A,P) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 3. Distribution of shellfish biotoxins in Southern California during January, 2010.



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Very low numbers of this diatom were observed in samples from Tomales Bay and inside Monterey Bay.

Domoic acid was not detected in any shellfish samples analyzed in January.

Non-toxic Species

Detritus dominated all phytoplankton samples during January. A few diatoms were common in samples from Humboldt Bay (*Skeletonema*, *Thalassiosira*), while the dinoflagellate *Prorocentrum micans* was common in one sample from Santa Cruz.



The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Public Health, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide effort designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public health is threatened.

For More Information Please Call:
(510) 412-4635

For Recorded Biotoxin Information Call:
(800) 553-4133

QUARANTINES:

There were no quarantines or health advisories in place in January.

The annual quarantine goes into effect each year on May 1 and applies specifically to the sport-harvesting of mussels along the entire California coastline, including all bays and estuaries. Routine phytoplankton and biotoxin monitoring is maintained throughout the year. This allows the detection of unexpected increases in biotoxin activity outside of the routine quarantine period. The annual quarantine does not apply to the certified commercial shellfish growing areas in California, which are monitored intensively throughout the year. All certified shellfish growers are required to submit at least weekly samples of shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health.

Consumers of Washington clams, also known as butter clams (*Saxidomus nuttalli*), are cautioned to eat only the white meat. Washington clams can concentrate the PSP toxins in the viscera and in the dark parts of the siphon and can remain toxic for a long period of time. Persons taking scallops or clams, with the exception of razor clams, are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Razor clams (*Siliqua patula*) are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat as well as in the viscera.

PSP toxins affect the human central

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Figure 4. Distribution of shellfish biotoxins in Northern California during January, 2010.

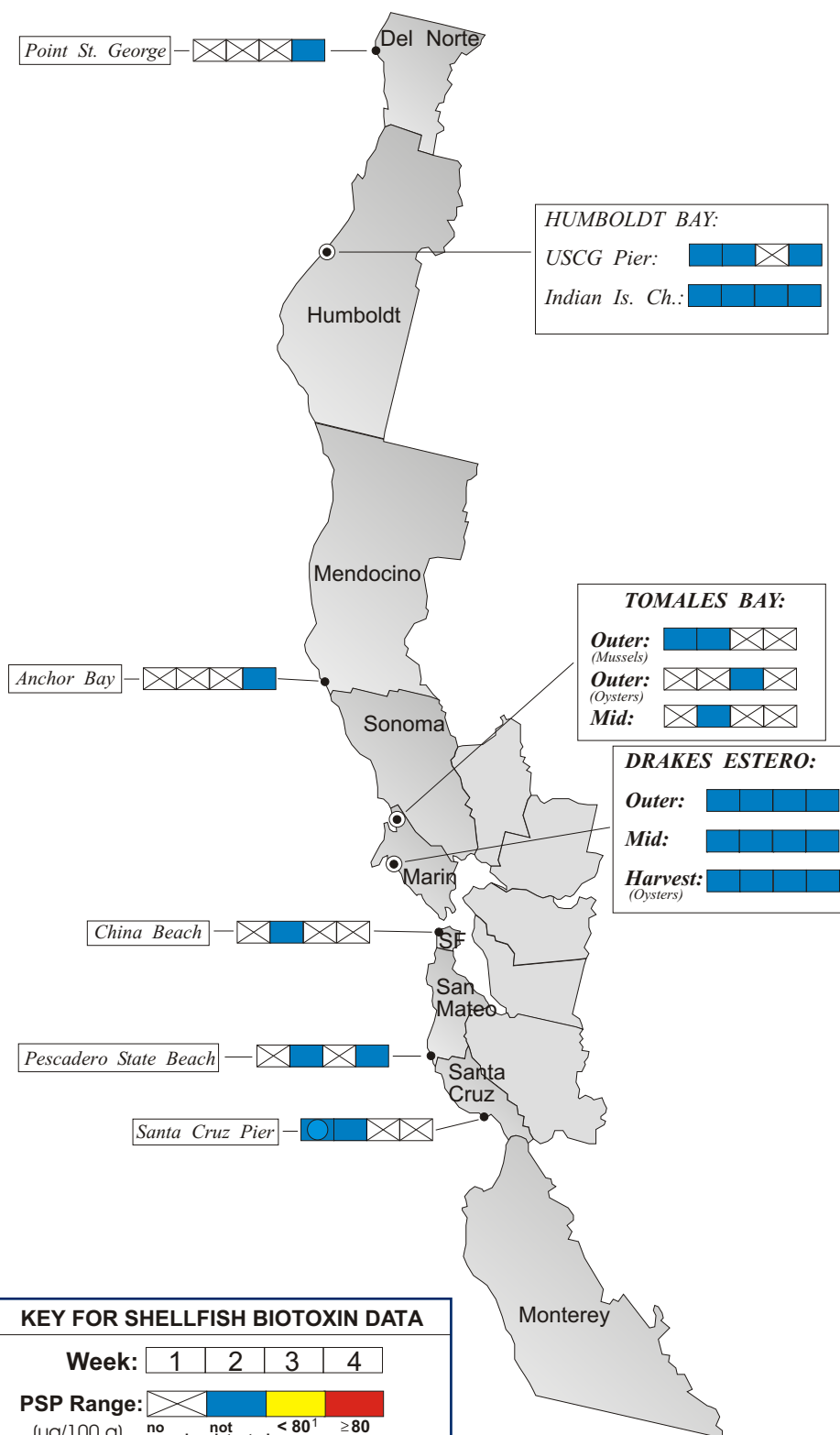


Table 1. California Marine Biotxin Monitoring Program participants submitting shellfish samples during January, 2010.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	7
Mendocino	CDPH Volunteer (<i>Marie De Santis</i>)	1
Sonoma	None Submitted	
Marin	Cove Mussel Company	1
	Drakes Bay Oyster Company	16
	Hog Island Oyster Company	2
	Marin Oyster Company	1
San Francisco	San Francisco County Health Department	1
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	U.C. Santa Cruz	3
Monterey	None Submitted	
San Luis Obispo	Grassy Bar Oyster Co.	8
	Morro Bay Oyster Company	8
Santa Barbara	Santa Barbara Mariculture Company	8
	U.C. Santa Barbara	4
	Vandenberg AFB	2
Ventura	None Submitted	
Los Angeles	None Submitted	
Orange	None Submitted	
San Diego	Carlsbad Aquafarms, Inc.	5
	Scripps Institute of Oceanography	1

nervous system, producing a tingling around the mouth and fingertips within a few minutes to a few hours after eating toxic shellfish. These symptoms typically are followed by disturbed balance, lack of muscular coordination, slurred speech and difficulty swallowing. In severe poisonings, complete muscular paralysis and death from asphyxiation can occur.

Symptoms of domoic acid poisoning can occur within 30 minutes to 24 hours after eating toxic seafood. In mild cases, symptoms of exposure to this nerve toxin may include vomiting, diarrhea, abdominal cramps, headache and dizziness. These symptoms disappear completely within several days. In severe cases, the victim may experience excessive bronchial secretions, difficulty breathing, confusion, disorientation, cardiovascular instability, seizures, permanent loss of short-term memory, coma and death.

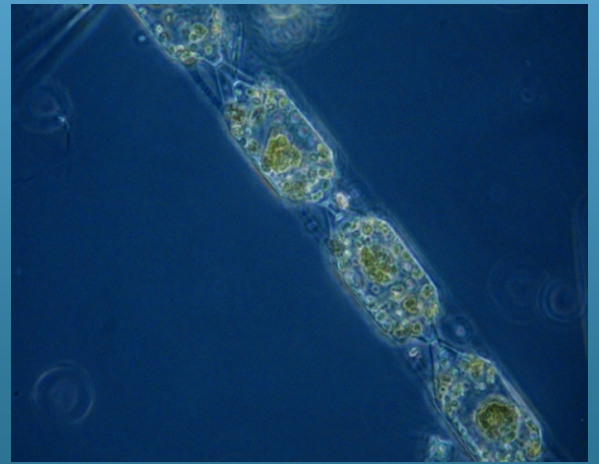
Any person experiencing any of these symptoms should seek immediate medical care. Consumers are also advised that neither cooking or freezing eliminates domoic acid or the PSP toxins from the shellfish tissue. These toxins may also accumulate in the viscera of other seafood species such as crab, lobster, and small finfish like sardines and anchovies, therefore these tissues should not be consumed. Sport harvesters are encouraged to contact the "Biotxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during January, 2010.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	3
Humboldt	Coast Seafood Company	4
	Bureau of Land Management	1
Mendocino	CDPH Volunteer (<i>Marie De Santis</i>)	3
Sonoma	None Submitted	1
Marin	CDPH Volunteers (<i>Brent Anderson</i>)	5
	Drakes Bay Oyster Company	9
	SFSU, Romberg Tiburon Center	1
San Francisco	CDPH Volunteer (<i>E. McNaughton</i>)	1
San Mateo	CDPH Volunteer (<i>Kathleen Abadie</i>)	1
	San Mateo County Environmental Health Dept.	1
	The Marine Mammal Center (<i>Stan Jensen</i>)	1
	U.C. Santa Cruz	2
Santa Cruz	San Lorenzo Valley High School	1
	Santa Cruz County Environmental Health Dept.	3
	U.C. Santa Cruz	3
Monterey	Monterey Abalone Company	4
	CDPH Volunteer (<i>Jerry Norton</i>)	1
	Friends of the Sea Otter (<i>Aya Obara</i>)	2
San Luis Obispo	Friends of the Sea Otter (<i>Kelly Cherry</i>)	4
	Morro Bay National Estuary Program	1
	Monterey Bay National Marine Sanctuary	1
	Morro Bay Oyster Company	2
	Tenera Environmental	1
	The Marine Mammal Center (<i>Tim Lytsell, P.J. Webb</i>)	7
Santa Barbara	CDPH Volunteer (<i>Sylvia Short</i>)	3
	Channel Islands National Marine Sanctuary	1
	Santa Barbara Mariculture Company	1
	U.C. Santa Barbara	4
Ventura	CDPH Volunteer (<i>Fred Burgess</i>)	3
	Channel Islands National Marine Sanctuary	1
Los Angeles	Los Angeles County Sanitation District	3
	Southern California Marine Institute	1
Orange	California Department of Fish and Game	2
	Ocean Institute	1
San Diego	Avian Research Associates	2
	Carlsbad Aquafarms, Inc.	1
	Scripps Institute of Oceanography	4

PHYTOPLANKTON GALLERY



A few diatoms, like *Stephanopyxis* pictured here, were among the storm-driven detritus that is common in our winter samples.



Dinoflagellates remain rare in most coastal areas during the winter.



The somewhat rare dinoflagellate *Gyrodinium* was observed earlier in the year.